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AFRL's robot hobbyists compete on BattleBots

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EDWARDS AFB, Calif. — Warriors come in many shapes, sizes, and even scientific disciplines. The lucky ones get to choose the size of their adversary and even the time of battle.

This is the case for six Air Force Research Laboratory employees from the Edwards Research Site's Propulsion Directorate. These robot hobbyists and three teammates that work at NASA-Dryden Flight Research Center competed at the latest BattleBots Tournament near San Francisco. BattleBots is a robotic combat sport whose competitions are broadcast on the "Comedy Central Presents BattleBots" TV series. The results of this latest tournament started airing in January.

Named the X-Plane Refugees, the team includes AFRL members: Lester Knox, George Harting, Gregory Ruderman, Adams Irvine, Steven Bremer, and Steven Hanna. The NASA contingent includes David Granica, Ryan Dibley, and Trevor Foster, a senior at CalPoly-San Luis Obispo.

These rocket scientists and engineers had turned their adult hobby interest into a quest for top prizes against seasoned veterans of earlier BattleBot battles, applying the same preparations they use when pursuing rocket propulsion or flight research.

Their plan was to compete with three different homemade, radio-controlled robots that were not something you would like to meet in a foreign cave, tunnel, or competition arena. The first, named 'TDM', was a lightweight spinner-style robot with weapons that would cause any adversary to run in the opposite direction. A middleweight tank-style robot named 'Space Monkey' comes equipped with two 10,000-rpm spinning blade weapons. Its heavyweight brother, with a similar design, is named 'Space Ape'.

On the last day of competition the X-Plane Refugees team had reached the top 16 contenders in the middleweight division with Space Monkey. Remote control driver Dibley of NASA-Dryden was ready for the Space Monkey's fifth combat of the week. Each of its prior bouts had required many sleepless hours of effort for repairs and modification by the team.

To match more experienced drivers, gain points from the judges, and win the attention of the audience, Dibley emphasized that, "We have to be aggressive. They score on aggression, tactics, and damage to the other robot. Its no guarantee, but I think we will do all right."

Suddenly, because of a frequency mismatch, Dibley and his team had to make a frequency change that was loaded with danger. All their hours of construction and design were now dependent on an untried secondary control system.

As the two teams entered the arena and were introduced by an announcer, the atmosphere took on all the flavor of a prizefight. Flashing arena lights and lots of noise from the audience of nearly 1,500 fans who crowded onto bleachers surrounding the arena and created additional excitement for the competition.

Space Monkey made its move against its opponent. Instead of parts flying and actions like reversing, flipping, spinning, and pushing its opponent, it sputtered across the arena with intermittent actions while Dibley tried to establish positive control with his radio controls. It was not the reward he and his team were expecting for their hard work and investment. Space Monkey ground to a halt and the victory went to their adversary. Rather than a powerful opponent, their Battlebot had been defeated by a bad radio control link.

All was not lost for the X-Plane Refugee team. With a day to rest and restoring Space Monkey to its original control frequency, the X-Plane Refugees team got a chance to enter a free-for-all combat with nine other battlebots.

That five minutes of uncontrolled mayhem began with Space Monkey showing its design attributes, colliding and inflicting damage to its opponents. Then a sudden hit on its armored side brought the robot to a halt.

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After the match was over, they recovered Space Monkey and discovered the reason for the failure. Its antenna had been sliced in half by a wobbling wheel. As they took Space Monkey back to their workbench, the team was busy discussing how to modify and armor their antenna for the next competition.

In reality, the real winner of these competitions is the nation and our workforce of tomorrow. The BattleBots show inspires young people and gets them involved in design, engineering, and construction of unique vehicles. Together with teams like the X-Plane Refugees, they help fill the nation's need for young engineering talent and innovation. **@**